

Research Digest

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TxDOT Research Publications

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Item 1

0-6651, Continuous Prestressed Girder Bridges

TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT). RESEARCH AND TECHNOLOGY IMPLEMENTATION OFFICE (RTI)

TTI 6651 PSR • [2016]

"This project focused on developing additional economical design alternatives for longer-span bridges with main spans ranging from 150-300 ft, using continuous precast, prestressed concrete bridge structures with in-span splices... During Phase 1 of the project, researchers evaluated the current state of the art and practice relevant to continuous precast, prestressed concrete girder bridges and recommended suitable continuity connection details for typical Texas bridge girders. During Phase 2 of the project, researchers developed detailed design examples, conducted a parametric design study, and tested a full-scale modified Tx70 girder specimen containing three splice connections. Based on the findings from Phases 1 and 2, design guidelines and recommendations were developed for in-span splice connection details for use in continuous precast, prestressed concrete girder bridges."
(2 pages)

This report is available for free download (361 KB):

<http://tti.tamu.edu/documents/0-6651-S.pdf>

Item 2

0-6708, Traffic Control for Access Points within a Lane Closure on a Two-Lane, Two-Way Road

TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT). RESEARCH AND TECHNOLOGY IMPLEMENTATION OFFICE (RTI)

TTI 6708 PSR • 2013

"When a lane is closed on a two-lane, two-way road for construction or maintenance, provisions must be made to alternate one-way movement of the two original travel lanes through the work area. There are often low-volume access points (e.g., residential driveways or county roads) within the temporary one-lane section of roadway. Existing access point control methods are not always feasible based on conditions such as work duration, traffic volume, time of day, and cost of the method. This project evaluated alternative methods to control traffic entering a lane closure on a two-lane, two-way road from low-volume access points." --Background
(2 pages)

This report is available for free download (208 KB):

<http://tti.tamu.edu/documents/0-6708-S.pdf>

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Item 3

Performance Studies and Future Directions for Mixes Containing RAP and RAS: Technical Report TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)

TTI 6738-2 • 2016

In the last several years reclaimed asphalt pavement (RAP) and recycled asphalt shingles (RAS) have been widely used in asphalt mixes in Texas. The use of RAP/RAS can significantly reduce the initial cost of asphalt mixtures, conserve energy, and protect the environment. There are always two main concerns: variability of RAP/RAS and durability (or cracking) of RAP/RAS mixes. Past studies in Texas have clearly indicated that both RAP and RAS have acceptable variability following the best practices for handling RAP/RAS. This study focused on the durability problems of RAP/RAS asphalt mixes. First, extensive laboratory tests were performed to investigate the impacts of RAP/RAS on the durability of RAP/RAS blended binders and asphalt mixes. Second, a field survey on test sections with RAP/RAS mixes was conducted to identify how significant RAP/RAS are and which approach to improve the durability problems of mixes. third, a pavement life cycling cost analysis on RAP/RAS mixes was conducted to investigate the financial benefits of them. Finally, the findings, conclusions, and recommendations for RAP/RAS mixes are made.

(xii, 112 pages)

CONTENTS

- Chapter 1 Introduction
- Chapter 2 Literature Review
- Chapter 3 Laboratory Evaluation on Durability Problems of RAP/RAS Binders and Mixes
- Chapter 4 Investigation of Oven Curing Conditions for RAP/RAS/WMA
- Chapter 5 Field Performance of RAP/RAS Test Sections and Forensic Study
- Chapter 6 Life Cycle Cost Analysis on RAP/RAS Mixes
- Chapter 7 Recommendations for RAP/RAS Mixes
- Chapter 8 Summary and Conclusions
- References

This report is available for free download (4.8 MB):

<http://tti.tamu.edu/documents/0-6738-2.pdf>

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Item 4

Project Consistency Guidance. Part B, Supplementary Information Document: Maintaining Project Consistency throughout the Project Development Process

SOUTHWEST REGION UNIVERSITY TRANSPORTATION CENTER (SWUTC)

TTI 6758 Suppl. • 2014

"This Supplementary Information Document (SID) was developed for transportation professionals responsible for project development and has a basic goal of providing an overview of the subjects that are deemed necessary for maintaining project consistency. It provides an overview of the transportation planning process, air quality conformity process, and environmental process under the National Environmental Policy Act (NEPA)—processes that either include or impact steps in the project development process—and identifies the entities responsible for advancing projects through the various steps in each process. To meet this goal, this document is organized as follows: Chapter 2 provides an overview of the transportation planning and transportation funding. Chapter 3 covers transportation conformity. Chapter 4 gives an overview of the Texas Department of Transportation (TxDOT) project development and environmental review processes." --page 1
(34 pages)

CONTENTS

- Chapter 1. Overview
- Chapter 2. Transportation Planning and Project Development Process
- Chapter 3. Project Development and Environmental Review
- Chapter 4. Transportation Conformity
- Appendix A. Overview of Project Development Process
- Appendix B. Transportation Conformity Process
- Appendix C. Federal Laws and Regulations on Transportation Conformity
- References

This report is available for free download (1.8 MB):

<http://swutc.tamu.edu/publications/technicalreports/0-6758-1Supplement.pdf>

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Item 5

Dynamic Ride-Share, Car-Share, and Bike Share and State-Level Mobility: Research to Support Assessing, Attracting, and Managing Shared Mobility Programs: Final Report

TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)

TTI 6818-1 • 2016

Texas is one of the fastest growing states in the nation, and its growth is expected to continue, supported by diversity in its economy, geography, and population. The challenge of prioritizing limited resources in this environment requires a proactive approach to travel demand management. This project provides guidance for TxDOT in its planning and mobility efforts and in understanding the viability of various alternative mobility programs. This report describes research of best practices and lessons learned from mobility programs. The research describes executive interviews, focus groups, and surveys to obtain details and document perspectives of the varying stakeholder groups. The research produced a guidebook that will aid TxDOT in determining how to best identify and implement alternative mobility programs in a given region as part of its planning and mobility efforts.

(xii, 207 pages)

This report is available for free download (10.7 MB):

<http://tti.tamu.edu/documents/0-6818-1.pdf>

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Item 6

TxDOT Project 0-6902 Technical Memorandum for Task 1

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)
CTR 6902 Tech Memo 1 • 2015

"The intent of this research project is to form a core knowledge group, known as the Texas Technology Task Force (TTTF), and a network of subject matter experts (SMEs) that will identify emerging technologies with the potential to transform Texas's transportation system. The TTTF and UT-Austin research team will analyze potential impacts of the technologies and use the analysis to inform the development of key strategies to select and promote the most critical of these technologies. The Task Force is committed to advancing the development of a high-performance transportation system to position Texas as the leading nexus of economic activity and technological innovation. Since its inception in February 2013, the Task Force has supported the Texas Department of Transportation (TxDOT) by outlining clear actionable strategies and enhancing the delivery of quality transportation services. The Task Force has progressed through three phases... [This phase is] Dedicated to updating the Emerging Technology Portfolio, developing white papers on critical technologies, and drafting initial chapters of the STBP. Already in this phase, the research team has prepared the following three products: 1) Updated List of Task Force Members (P1), 2) Emerging Transportation Technology Portfolio (P2), 3) Critical Transportation Technologies (Preliminary Analysis) (P3). The remainder of this technical memorandum reports on returning and proposed new Task Force members, updates and expansion to the technology portfolio, Phase III meeting goals, and the selection of critical technologies for focus during Phase III." --Introduction (104 pages)

CONTENTS

- Introduction
- Task Force Membership, Meeting Dates, and Goals
- Critical Technologies, Meeting Discussion, and Technology Package Selection
- Conclusions
- Appendix I. Agenda and minutes for TTTF Meeting on December 10, 2015
- Appendix II. TTTF Meeting Presentations

This report is available for free download (9.7 MB):

<http://library.ctr.utexas.edu/ctr-publications/0-6902-tm1.pdf>

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Item 7

TxDOT Project 0-6902 Technical Memorandum for Task 2

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)
CTR 6902 Tech Memo 2 • 2015

"The Task Force has progressed through three phases... [This phase is] Dedicated to updating the Emerging Technology Portfolio, developing white papers on critical technologies, and drafting initial chapters of the STBP. Already in this phase, the research team has prepared the following three products: 1) Updated List of Task Force Members (P1), 2) Emerging Transportation Technology Portfolio (P2), 3) Critical Transportation Technologies (Preliminary Analysis) (P3). The remainder of this technical memorandum reports concluding work for Phase III—specifically, on the prioritization of top technologies in the Emerging Technology Portfolio to identify and recommend technology opportunity areas in STBP in next phases. Next steps are provided." -- Introduction
(6 pages)

CONTENTS

- Introduction
- Emerging Technology Portfolio
- Technologies Down-Selection and Prioritization
- Technologies Down-Selection and Prioritization Results
- Critical Technology Workshop and Next Steps

This report is available for free download (154 KB):

<http://library.ctr.utexas.edu/ctr-publications/0-6902-tm2.pdf>